

# User Manual for the Bioenno Power BLF-1212-PCM (Protection Circuit Module)

Thank you for purchasing the **Bioenno Power BLF-1212-PCM** (Protection Circuit Module). This protection circuit module provides balancing of the LiFePO<sub>4</sub> cells, as well as protection of overvoltage, undervoltage, and overcurrent. The BLF-1212-PCM is used for assembling 12V, 12Ah LiFePO<sub>4</sub> packs with maximum discharge current of 12A (do not exceed 12A continuous.)

## Illustrations

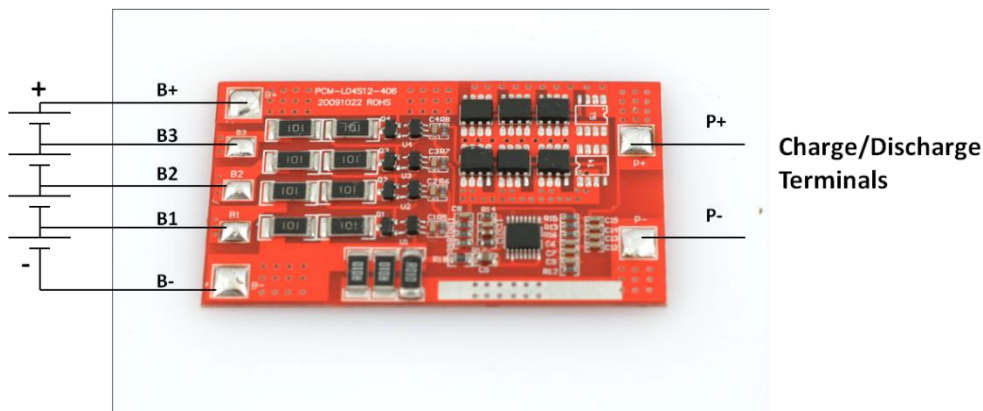


Fig. 1: Bioenno Power BLF-1212-PCM

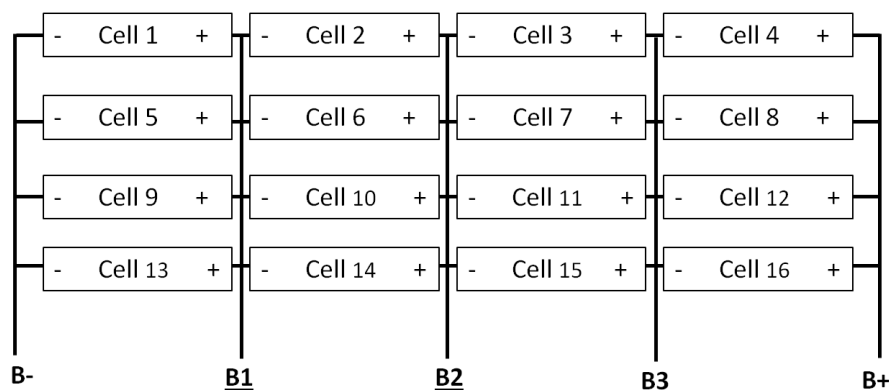


Fig. 2: Example Cell Configuration and attachment to the PCM using 3.2V, 3200 mAh LiFePO<sub>4</sub> cells for assembling a 12V, 12Ah LiFePO<sub>4</sub> battery pack.

## Instructions for Use

1. Please note that this PCM is to be used by individuals who are familiar with assembling their own LiFePO<sub>4</sub> packs using LiFePO<sub>4</sub> cells. Please use caution when assembling LiFePO<sub>4</sub> cells. Bioenno Power is not responsible for any damage from use of PCMs.
2. Refer to Fig. 1 above. P- and P+ correspond to the charge/discharge terminals for the battery pack. Solder on a Red wire (positive lead) to the P+ terminal. Solder on a Black wire (negative lead) to the P- terminal. B-, B1, B2, B3, and B+ correspond to the terminals on the PCM that attach to the individual cells in the LiFePO<sub>4</sub> battery pack. Use wiring to attach the B-, B1, B2, B3, and B+ terminals to the cells as shown in Fig. 2 above.
3. As shown in Fig. 2 above, use 16 pieces of the 3.2V, 3200 mAh LiFePO<sub>4</sub> cells and use solder and wiring in the electrical configuration as shown above.
4. **To activate the PCM, use a 14.6VDC, 2A charger to apply a voltage to the P+ and P- terminals. Charge the battery pack for 6 to 8 hours (overnight).**

## Caution

1. PCMs should be used by individuals who are familiar with soldering their own LiFePO<sub>4</sub> packs.
2. Use caution when assembling LiFePO<sub>4</sub> cells.

## Specifications

<b>Battery Pack</b>	For use in assembling 12V, 12Ah LiFePo4 battery packs
<b>Charge Voltage</b>	14.4VDC ~ 14.6VDC (3.6VDC ~ 3.7 VDC / cell)
<b>Maximum Continuous Discharge Current</b>	<b>12A (make sure your electrical load consumes less than 12A)</b>
<b>Isostatic Voltage of a Single Cell</b>	3.60 VDC (+/- 0.03 VDC)
<b>Isostatic Current of Single Cell</b>	72 mA +/- 10 mA
<b>Self Decrement Current for a Single Cell</b>	< 50 micro-amps
<b>Overcharge Protection (Single Cell)</b>	Overcharge Test Voltage: 3.90VDC (+/- 0.025 V) Overcharge Test Time: 0.5 seconds to 1.5 seconds Overcharge In-Saturation Voltage: 3.80 VDC (+/- 0.05V)
<b>Overdischarge Protection (Single Cell)</b>	Overdischarge Test Voltage: 2.00 VDC (+/- 0.08V) Overdischarge Test Time: 0.5 seconds to 1.5 seconds Overdischarge In-Saturation Voltage: 2.50 VDC (+/- 0.1 V)
<b>Overcurrent Protection</b>	Overcurrent Test Voltage: 0.15V (+/- 0.025VDC) Overcurrent Test Current: 50A (+/- 10A) Overcurrent Test Time: 5 milliseconds to 50 milliseconds
<b>Short Circuit Protection</b>	Test Status: Outside short circuit Test Prolong Time: 200 to 500 micro-seconds
<b>Internal Resistance</b>	Protection Circuit (MOSFET) <50 milli-ohms
<b>Operating Temperature</b>	-40 deg C to 85 deg C
<b>Storage Temperature</b>	-40 deg C to 125 deg C
<b>Size</b>	70 mm x 40 mm x 5 mm



### Warranty (6 months)

Bioenno Power and Bioenno Tech LLC warrants only to the original purchaser of this product that this product is free of defects in material and workmanship for 6 months from time of purchase as indicated on the receipt or invoice. This product will be replaced within the 6 month period as long as the buyer contacts Bioenno Power and Bioenno Tech LLC within this time period (by telephone or email communication). This warranty does **NOT** cover damage to the product caused by abuse or neglect, modification by tampering with the product casing, failure to keep the battery properly charged or maintained, disposal in a fire, freezing, theft, overcharging, or other forms of damage. This warranty shall be in lieu of any other warranty, express or implied, including but not limited to, any implied warranty of merchantability or fitness for a particular purpose.

### Contact

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